## STATE OF NEVADA DEPARTMENT OF HIGHWAYS

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STATE OF NEVADA

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## DEPARTMENT OF HIGHWAYS



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### 28th Biennial Report

Fiscal Years 1971-72

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#### LETTER OF TRANSMITTAL

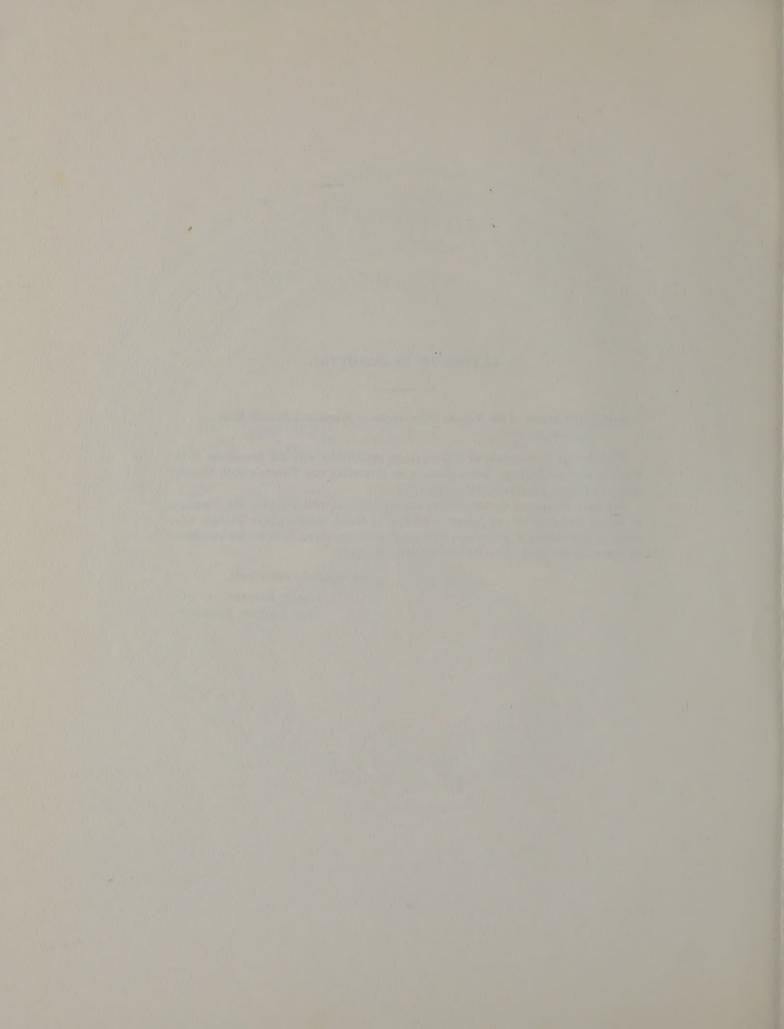
Honorable Members of the Nevada State Highway Board and Nevada State Legislature:

The Nevada Department of Highways, in accordance with the provisions of the Nevada Revised Statutes, takes pleasure in presenting our Twenty-eighth Biennial Report covering fiscal years 1971 and 1972.

We have attempted to outline the Department's activities during the biennium as briefly and concisely as possible. As can be noted, several major changes were made in departmental operating procedures as we continued to strive for excellence in providing the public with the best highways possible.

Respectfully submitted,

GRANT BASTIAN
State Highway Engineer



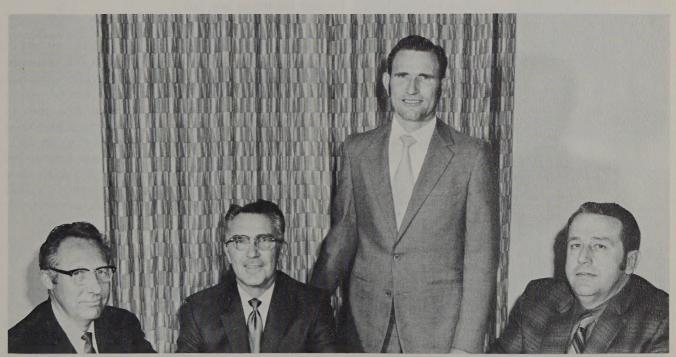
#### HIGHWAY BOARD OF DIRECTORS



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Hwy. Business Mgr.

#### **FOREWORD**

The old saying "You won't know the players without a scorecard" could well be applied to the Nevada State Highway Department for this biennial reporting period. Changes were numerous in management and organizational structure as the Department continued to modify and upgrade its operational policies and procedures.

Two members of the three member Highway Board of Directors are new since the last report as are the State Highway Engineer and his two deputies for Engineering and Planning, and Operations. In addition, the Department's first Business Manager was appointed to direct the Department's administrative functions.

Reorganization and/or realignment of several divisions/sections was undertaken to upgrade management practices and procedures. Through the use of new policies many improvements were made in the services provided by both the administrative and engineering factions.

During the upcoming biennium, the Department will continue to direct its endeavors toward providing Nevadans with outstanding highways.



#### **INTERNAL AUDIT**

The 1971–1972 biennial period saw a shift in audit emphasis. The Audit Section went from essentially a cost oriented audit concept to a procedural technique of review. All auditing, except the external auditing of utility companies, is reviewed from an operational and/or procedural approach.

All major functions within the Highway Department are audited annually. However, interim reports are made when a situation merits immediate attention. The section has the complete support of the Federal Highway Administration in this new audit concept.

#### **NEVADA MAGAZINE**

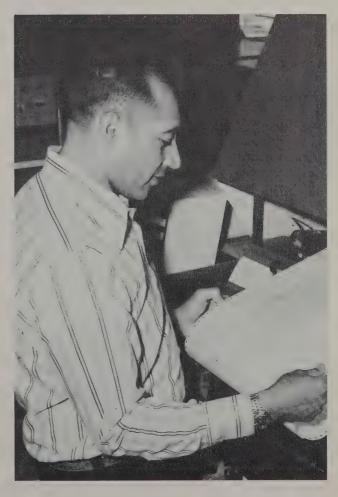
The Nevada Highways and Parks magazine continues to grow steadily. Paid readership now numbers over 20,000, an increase of over 20 percent during the 2-year reporting period. During this time the average press run was 73,868 copies and the average number of paid advertisements stood at 14 pages.

#### DATA PROCESSING

During fiscal years 1971–1972, the Data Processing Division experienced rapid change and growth.

The State's central computer was moved from the Highway Department to a new building. The State Computer Facility is continually growing and provides the most up-to-date capabilities of both equipment and personnel. In order to provide the best service possible, the division installed the State's first remote job entry computer whereby computer input is read at highway headquarters and sent by underground cable to be processed at the central computer. The computer output is then sent back to be printed at highway.

A major organization change occurred in the Department, and computer programming personnel previously assigned and administered by separate divisions were consolidated in the Data Processing Division. The reorganization developed programming teams serving in engineering, planning, and administrative areas. Special teams are used to handle exceptional data processing problems.

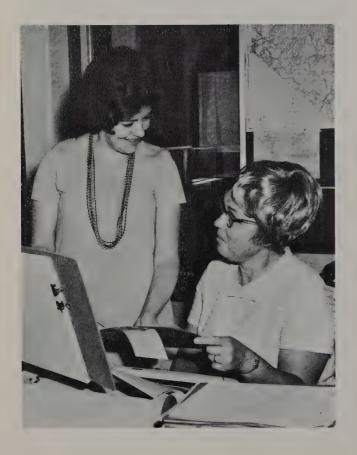


#### **ADMINISTRATIVE SERVICES**

The Operational Services Section now incorporates systems and methods; buildings and grounds; contracts, permits, and office services; and the records management sections.

Studies were made to eliminate problem areas and/or upgrade the system used for agreement processing, forms control, the *Highways and Parks* magazine operation, and for processing applications for different types of permits. Based on these studies departmental directives are now in the process of being combined into a single policies and procedures manual with priority given to the administrative areas.

The Support Services Section includes public information; public hearings; reproduction; purchasing and stores; and photo sections. As the Department's major focal point for the issuance of public statements, this office produces and distributes information on all phases of highway activity to the mass news media of newspapers, radio and television. In addition, this section is responsible for coordinating the public hearings held on proposed highway projects throughout the State. During the biennium 16 public hearings were held for the purpose of informing the general public of the Department's proposals and satisfying the requirements of the FHWA.





#### ACCOUNTING AND FINANCE

This division was reorganized in order to provide more specialized services to management; to ensure development of modern accounting procedures; and to offer a greater range of services.

During 1972, the division added management analysts to their staff to provide broader management techniques in financial affairs. The division is structured, under the chief accountant, into three sections. These sections, the General Accounting Section, the Budget Section and the Operations Analysis Section, functionally reflect the needs of the Department.

The conversion to the State Centralized Financial Management Information and Reporting System was accomplished during the biennium. This conversion required considerable internal adaptation to satisfy state and federal requirements. Further revisions will be carried out in the months ahead.

#### **PERSONNEL**

The Personnel Section administered, or participated in 505 examinations during the biennium in addition to conducting 137 classification studies.

Employee turnover during the reporting period was reduced from slightly under 14 percent to 10.3 percent. The bulk of employee turnover occurred, in the



clerical, maintenance, custodial, and entry level of the engineering technician classifications.

Emphasis has continued to be placed in the hiring of economically disadvantaged people. The Department has provided a career ladder for these individuals in a wide variety of occupational areas. The total number of career employees as of June 30, 1972 was 1,532 of which 132 were minorities.

#### **TRAINING**

The highway training program was continued during the biennium in the areas of traditional interest. Courses were conducted in equipment operation; driver training; field testing and office management in the construction field; updating of skills in the design area; management development; engineer-in-training curriculum; basic education; and the cooperative engineering program with the University of Nevada. Development work was started in courses for upper management personnel; the secretarial skills; and refresher courses in basic supervision.

The section continued the administration of the high school equivalency test on a statewide basis. To date, 69 employees have received the Certificate of Equivalency.

Several courses were offered to upgrade the skills of personnel involved in the fields of ecology, economics of highway design, and highway safety. This type of training will be offered on a continuing basis.

#### FLIGHT OPERATIONS

During the reporting period this section was transferred from the Planning Survey Division to the control of the Highway Business Manager. This reassignment was made in an effort to improve overall service to the Department and to facilitate scheduling of the two aircraft.

Location used aerial photos to determine the most desirable route for a proposed highway. Many hundreds of aerial shots were used by the Design Division for studying alignment, drainage, and topography. In many instances, vertical aerial photos were transferred to hard copy. The Planning Survey Division also used numerous high altitude aerial photographs for map-making and establishing current street patterns in widely scattered communities.

In addition to the use of vertical photography in the study of controversial property evaluations, it is important to note that the Right-of-Way Division continued to find an ever-increasing demand for aerial obliques. The oblique photographs were used in condemnation suits and proved their value in court on many occasions.



#### **EQUIPMENT**

Improvement in fleet operating potential is continuing with acquisition of larger haul units, and upgrading the bull-dozer and snow removal fleets. The equipment retirement program previously inaugurated received special attention because of the increase of time-consuming and expensive replacement part procurement for the older units. Efforts in improving equipment accounting procedures for obtaining cost data on repairs and operations continued. Also, a study aimed at the revision of the rental rate system was undertaken.

During the past two years shop facilities were carefully reviewed for improvements or additions that would provide greater efficiency. At the present time a new shop complex is being planned at a new site in Las Vegas.

magnetic particle, dye penetrant and radiographic methods were used by this section in various steel fabrication plants.

A geological foundation section was added to the division by reassigning seven men and several additional pieces of specialized equipment to the headquarters laboratory. Bearing tests of piles, settlement of fills, drilling and developing of water wells, foundation studies for structures, percolation test for maintenance yards are some of the functions of this new section.

Special studies are being conducted on corrosion of steel in concrete, use of additives and retarders in concrete mixes, waterproofing materials for bridge decks, effects of salt concentrations on concrete, steel and aluminum pipes, "anti-strip" additives for asphaltic mixes, impact tests on welded material, grouting materials for soil stabilization and de-icing mixtures for use by the Maintenance Division.



#### MATERIALS AND TESTING

During the period July 1, 1970, to June 30, 1972, a total of 158,569 tests were performed by the headquarters laboratory. A new section was instituted to perform non-destructive testing on steel used in bridge construction. Inspection and testing of the welded material covered 10,391,890 lbs. of structural steel. Ultra-sonic,





#### **COMMUNICATIONS**

The Communications Division completed the installation of a long range mobile communication system in District 4, consisting of a nine station intercommunication system, controlling three mountain top relay stations at Prospect Peak near Eureka, Cave Mountain near Ely and Highland Peak near Pioche. Long range mobile communications was demonstrated by mobile to mobile communications from the vicinity of Highland Peak near Pioche to the Eureka area and contacts to each district intercommunication station.

Equipment to equip District 3 was delivered during this period and the long range capability will be developed as well as an inter-division communication capability between fixed stations.

The cooperative project with the television broadcast stations has progressed to the point that KTVN will be transmitting programs via Toulon Peak, Winnemucca Mountain, Marys Mountain and Grindstone Mountain by late 1972.

Two mobile radio repeaters were installed and began operating at Sod House and Denio to improve coverage in the northern part of District 6.

The division has embarked on a replacement program for mobile equipment, some of which is over 16 years of age. This year's program shall eliminate equipment that has reached industrial obsolescence.

#### CONSTRUCTION

This division's staff was augmented by the reassignment of the equal opportunity staff during the biennium. Several changes that affected highway construction contractors were initiated, which were generally refinements of earlier reporting methods and initiation of new EO regulations and requirements.

The name of the Department's Equal Employment Opportunity Division was changed to Equal Opportunity Section and the organizational chart restructured so that the section now falls under the Labor Compliance Officer. This move was made in order to have a more comprehensive flow of information, avoid numerous duplications and tie in the equal opportunity requirements to those of construction.

Authority was delegated to the assistant district engineers in Reno, Las Vegas and Elko to handle the equal opportunity program on the local level and communicate their findings to the Equal Opportunity Section if further assistance is required.

Permanent duty stations established for field employees during the previous biennium are still in effect and working well. Employees are now well established in their assignments and appear to be taking an active part in community affairs.



#### **SAFETY**

During the biennial period the Department's accident frequency remained consistent, showing a small decrease in the insurance premium. The Department experienced two fatalities during this period and safety emphasis was placed on defensive driving for all departmental employees.

The Incentive Award for the department maintenance personnel has been effective in reducing the number of chargeable accidents. Districts 5 and 1 received the annual awards for having fewer chargeable accidents during the biennium.

The Safety Section, in cooperation with the Equipment Division and with the approval of the General Safety Committee, was instrumental in securing new high level warning signs that have been distributed throughout each district. They have been very effective in moving traffic around working areas.





#### **MAINTENANCE**

The 1971 State Legislature approved legislation to provide assistance to county government jurisdictions for improvement of county-maintained roads on state highway systems. In April of 1972, the Maintenance Division was given the responsibility of coordinating the program with county commissioners throughout the State. Cooperative agreements were negotiated with the legislative requirement that the county participate in a pro rata share of the improvement and that the project would be maintained by the county upon completion, with the Department determining the standards to be met in the project.

State cooperative participation during the biennium has amounted to nearly \$293,600. Approximately \$350,000 has been allocated for calendar year 1973, which will be distributed among the counties, depending upon priority and need in the county, and providing the improvement is made to a rural road on the state highway system.

The Maintenance Division began development of a Maintenance Management System on May 1, 1972 with the firm of Byrd, Tallamy, MacDonald and Lewis contracted as consultants to assist in the development and

implementation of the system in Nevada. The maintenance management staff outlined three major objectives to be accomplished during the two-year project: Planning and work scheduling; performance budgeting; and program evaluation.

During the initial phases, major maintenance tasks will be defined and will serve as a basis for obtaining the three objectives. One of the prime elements is to establish a roadway inventory for both urban and rural roads that can be classified as Interstate, arterial, and feeder routes. Priority assignment will be based on resources, roadway classification, and management policy.



The maintenance management program, as developed in Nevada, permits more effective utilization of the resources of the Maintenance Division and provides a means for improved planning and budgeting of highway maintenance operations.

The Department will present the highway budget to the State Legislature in a format that will provide for the allocation of resources to various management units on the basis of needs and programmed work activities. The finances required to support the operation will be presented in accordance with the volume of work planned for each management unit.

The accomplishment of this objective will require a great deal of Maintenance Division-participation and will result in several policy changes. This should have a significant effect on developing a true performance budget as part of attaining the Maintenance Management System objective.

#### **ARCHITECTURE**

The Architectural Division was responsible for the preparation of plans, specifications, and contract documents for the construction of Department-owned buildings of many types including garage and repair shop structures, buildings for vehicle and equipment storage, residences and office buildings, motor fuel storage and dispensing facilities, water supply, sewage disposal and electrical systems. In addition, a continuing program of repairs, remodeling and modernizing older facilities was carried out.

The division also was responsible for inspecting projects during construction and administering contracts, including record-keeping, reports, change orders and arranging payments to contractors.

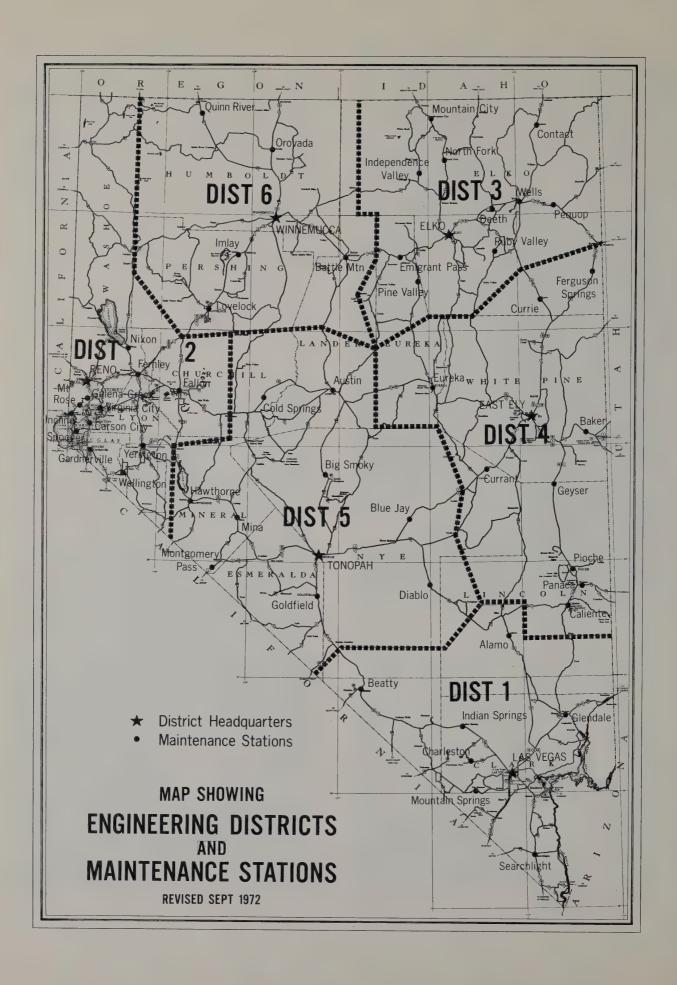
A new maintenance station was built at Fernley that included a shop building, gas depot, loading dock and fencing. Two new residences were constructed at Incline Maintenance Station and a new vehicle storage building at Wellington. District 6 Headquarters in Winnemucca received two new metal storage buildings. The Orovada and Quinn River Maintenance Stations each received two new houses, loading docks and an upgrading of their power systems.

Remodeling work was done in District 1 Headquarters, Las Vegas, and in the Hawthorne, Tonopah, Currant Creek and Panaca Maintenance Stations. The Equipment Division received additional automotive repair space with the construction of a shop to house a dynamometer testing pad.



Plans and specifications were completed for many small, informal contracts that included roof repairs, improving heating and cooling systems and remodeling and improving office space at Carson City Headquarter's and Lab buildings.

In the spring of 1972, a space study of headquarters was started and a revamping of space allotment was undertaken. The third floor was being rearranged at the close of the biennium.





#### **DISTRICT 1**

A total of 27 contracts that involved 15.9 miles of Interstate, 20.8 miles of primary, and 15.7 miles of the secondary system were let during the reporting period.

Construction activity reveals that 16 contracts were completed and that 32.8 miles of highway were built, including 20.8 miles of Interstate, 8.8 miles of primary, and 3.2 miles of the secondary system.

Maintenance activity during the biennium included resurfacing 6.6 miles of Interstate, 20 miles of primary, and 24.9 miles of the secondary system. Also, 21 miles of roadways were sealed and chipped, 29.5 miles sealed and sanded and 141 miles flush sealed. Cost of litter pick-up totaled \$193,623.

Ceramic traffic line buttons were installed along Sahara Avenue from the Boulder Highway to Interstate 15 and along the "Strip" (U.S. 91) from the south Strip approach, north to the intersection of Las Vegas Boulevard South and South Main Street. Two additional crossovers with storage lanes and the extension of an existing storage lane were constructed on Boulder Highway between Las Vegas and Henderson. Illuminated overhead signing was installed on the easterly side of the Sahara Avenue grade separation structure for improvement of traffic information on approaching Interstate 15 from the east.

A safety improvement contract by state maintenance forces was started during the biennium for upgrading existing roadside features and appurtenances to comply with present safety standards along Interstate 15 between Nevada-California state line to 2.4 miles north of the Garnet interchange.

#### **DISTRICT 2**

There were 30 contracts awarded during the biennium and included 9.5 miles of Interstate, 19.1 miles of primary, and 9.5 miles of secondary highway.

Construction was completed on 37 contracts and resulted in some 101.1 miles of new highway—45.3 miles of Interstate, 47.8 miles of primary, and 8.03 miles on the secondary system. Also, a maintenance station was constructed at Incline Village and vehicle storage building, loading dock and fencing provided the Wellington Maintenance Station. A safety rest site was completed at Wadsworth.

Maintenance projects included resurfacing 17 miles of Interstate, 39 miles of primary, and 56 miles of the secondary system. In addition 13 miles of roadway was sealed and chipped, 182 miles sealed and sanded and 40 miles was flush sealed. Debris removal during the biennium cost \$212,796. Several miscellaneous projects such as the repair of flood damage, drop inlets, and improvement of drainage structures, etc., also were completed.



#### **DISTRICT 3**

Several projects were completed during the reporting period and included three contracts for 11.37 miles of Interstate; three contracts for 22.02 miles of primary; and two contracts for 17.60 miles of the secondary system. A total of 12 contracts involving 75.54 miles of roadway were awarded during the biennium.

Maintenance work included the resurfacing of 1 mile of primary and 13 miles of the secondary system. In addition, 94 miles of roadway was sealed and chipped and 30 miles sealed and sanded. Cost of debris removal during the biennium totaled \$19,534.

#### **DISTRICT 4**

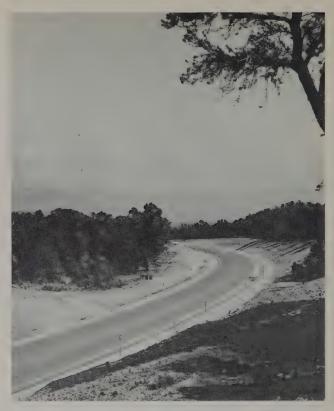
Two contracts for 3.7 miles of primary and 11.7 miles of secondary roadway were awarded and three projects involving 15.5 miles of highway were completed during the biennium.

The Currant Creek Maintenance Station was remodeled and a new garage completed. Heated storage was provided for asphalt and chain link fence at the Panaca Maintenance Station and a new fuel depot was built for the East Ely yard. A roadside rest facility also was completed at East Ely.

Litter pick-up cost \$30,895 during the reporting period and some 49.04 miles of roadways were resurfaced; 40.13 miles sealed and chipped; 105.64 miles sealed and sanded; and 94.30 miles flush sealed. Several miscellaneous projects were completed and included the installation of 117 feet of 24" CMP; manholes for storm drains; construction of 3,672 feet of curb and gutter; and cooperative agreements to install 35.1 miles of fencing.

The Pioche and Caliente and the Ferguson and Currie Maintenance Stations were combined and resulted in several supervisory changes. Three separate maintenance crews are now in the East Ely area.





#### DISTRICT 5

Construction activity during the biennium shows that three contracts involving 22.95 miles of primary and 12.32 miles of the secondary system were completed and new roadside rest facilities finished at Millers and Bluejay on U.S. 6.

Some 37.71 miles of the primary and secondary systems were resurfaced; 74.42 miles sealed and chipped; 173.06 miles sealed and sanded; 132.54 miles flush sealed (shoulders); and 33.06 miles flush sealed reclamite. In addition, a deceleration lane on U.S. 6 at the Millers Rest Area was completed and a vertical curve was eliminated to improve sight distance on U.S. 6 east of Coaldale. Debris removal cost \$46,885 during Fiscal Year 1971 and Fiscal Year 1972.

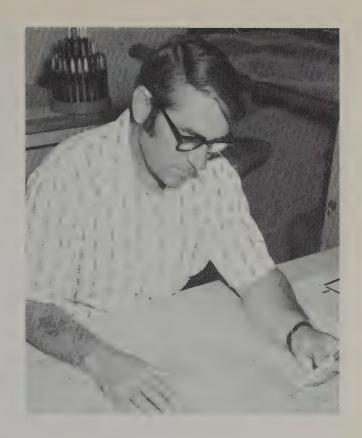
The Fish Lake Maintenance Station was abandoned with the men and equipment being divided between the Goldfield and Montgomery Pass Maintenance Stations. District mileage increased by 12.32 miles during the reporting period. Miscellaneous projects included a traffic signal at the junction of U.S. 95-S.R. 31 in Hawthorne; installation of radio vans on T.V. Hill (Hawthorne) and Montezuma (Goldfield); grading and paving of the district yard; co-op fencing agreement with BLM on U.S. 50 from junction U.S. 50-S.R. 23 to Middlegate; and a 5 mile county road co-op improvement with Nye County.

#### DISTRICT 6

Two Interstate contracts and one secondary project were awarded during the biennium for construction of some 23.26 miles of roadway. Four contracts were completed during the reporting period and involved 31.31 miles of roadways.

Additional land was purchased adjacent to the Winnemucca and Orovada Maintenance Stations. Storage buildings were constructed in the Winnemucca yard and four houses were erected at the Orovada and Quinn River Stations. The Valmy Roadside Rest Area was completed and improvements made on the Button Point and Humboldt Rest Areas during the biennium.

Litter removal during the reporting period cost \$55,343. Maintenance activities on district roadways saw 53.50 miles resurfaced; 66.15 miles sealed and chipped; 41.34 miles sealed and sanded; 111.32 miles flush sealed; and 91.56 miles shoulder sealed. Several other maintenance projects were completed during the biennium that included curb and gutter work; floor repair; the installation of drainage culverts; additional office space and a rest room to the basement of the district headquarters building; and the installation of 4.04 miles of fence on U.S. 95.



#### **PLANNING**

The Special Studies Section, with the aid of federal safety funds, established a statewide system to establish hazardous accident locations. The computerized system identifies accident locations on some 9,000 streets and roads in Nevada. During 1971, approximately 23,000 accidents were processed through this procedure. Currently, a study is underway to examine each hazardous location to recommend modifications to increase safety.

Travel habit and economic studies were taken relating to highway projects at Topaz, Minden, Gardnerville, Carson City, Battle Mountain, Carlin, Elko, Wells, Wendover, Ely, and Mesquite.

Updates were accomplished on commercial truck activities in both the Truckee Meadows and Las Vegas Valley urban areas, and an external traffic impact study was made on the Carson City-Douglas County area.

The cartographic section produced new county maps for Mineral and Esmeralda counties as well as numerous other highway related assignments.

Road life-inventory completed the State's portion of the 1970–1990 National Highway Functional Classification and Needs Study, the 1972 National Transportation Study, and the 1972–1990 Statewide Needs Study, as well as their normal assignments. The Urban Transportation Section, in concert with the local entities, completed the Las Vegas Valley Transportation Study and issued annual reports for both the Las Vegas Valley Study and Truckee Meadows. TOPICS studies also were undertaken for both areas.

The transportation study of the Carson City-Douglas County area is underway and the prospectus and work program for a joint study with California and TRPA in the Lake Tahoe area has been prepared.

The Traffic Section maintained normal analysis of the volume of traffic flows on the State Interstate System of highways and annual reports on these statistics were prepared and distributed.

The field of geodetic control and photogrammetry has expanded its output by approximately 30 percent in the last 2 years with the acquisition of a Cessna 206 and a Zeiss precision camera.

Staff training is currently under way to give Nevada the capability to undertake its future surveys by photogrammetric methods. An anticipated savings ranging from 25 percent to 65 percent on each survey is expected.

#### LOCATION

With reorganization of several departmental functions, the Location Engineer now falls under the cognizance of the Planning Survey Division.

During the biennium, 72 miles of location surveys were completed on the Interstate, primary, secondary and urban systems. Forty-two miles of surveys were completed for the districts and counties under the cooperative agreement program. Twenty-one miles of fence line were surveyed in District 5 in cooperative agreement with the Bureau of Land Management.

Many miles of controlled surveys for aerial mapping were made throughout the State. Over a hundred requests for updating surveys were made due to the development of lands since the original study. Considerable time was spent making preliminary studies of corridors for future projects.

Presently, the location section is in the process of updating the methods of surveying and mapping. The new survey equipment is electronic and the mapping will be done by plotter from the aerial photographs. Not only will the electronic and photo method be more economical, but a more complete survey will result.





#### **RIGHT-OF-WAY**

New state legislation enabled the division to fully comply with new federal laws that were enacted to remove or alleviate financial hardship that occurred to some displacees under the previous laws. Experience under the new legislation has been excellent; to date, no financial hardship cases have occurred because of displacements.

Responsibility for the custodianship of properties purchased, their disposition, and utilization of airspace both over and under highways has provided long term lease properties for such public use projects as Junior Achievement; the Northeast Reno Community Health Services Center; Clark County Civil Defense; and a City playground. Similar projects are underway in the cities of Elko, Winnemucca, Las Vegas, and Lovelock.

One of the most spectacular utilizations of airspace in the entire United States is beneath a viaduct on Interstate Route 80 in Sparks. A large casino leased the space on a long-term basis, and utilized it for a major expansion of its facilities including gaming activities and restaurant facilities.

During the biennium, the Right-of-Way Division completed a total reorganization by decentralization and streamlining its structure to meet the increased demands of federal and state laws.

A major part of the restructuring was the integration of the formerly separate Utilities Division into the right-of-way organization. This eliminated some overlapping functions and provided better liaison between operational areas.

New procedures were put into effect for the handling of off-premise outdoor advertising structures that are permitted in accordance with the requirements set forth by the State of Nevada Department of Highways and the Secretary of Transportation. Compliance with these requirements is determined by the utilization of district sign control personnel and the administration costs are defrayed through the use of inspection fees in conjunction with established annual permit fees.

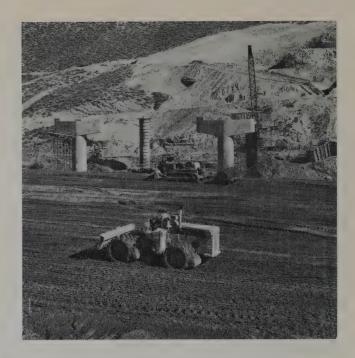
#### FEDERAL-AID PROGRAMS

Congressional action added an additional class of federal-aid funds and a special bridge replacement fund to the federal-aid highway program. There are now nine classes of federal-aid funds available to the State for programming that includes: Interstate, primary, rural primary, secondary, rural secondary, urban, urban system, TOPICS, and highway planning and research. The State is allocated funds for control of advertising, control of junkyards and for landscaping and scenic enhancement under the highway beautification program. In addition, the State was allocated federal lands highway funds for use on two specific projects and bridge replacement funds for one specific project.

There were \$95,317,189 of federal-aid funds, \$6,262,643 of right-of-way revolving funds, \$1,055,573 of beautification funds, \$3,700,000 of federal lands highway funds, and \$317,179 of bridge replacement funds available for programming during the biennium.



During the biennium the Program Section submitted 199 federal-aid programs, 100 in FY 1971 and 99 in FY 1972; 16 right-of-way revolving programs, 1 in FY 1971 and 15 in FY 1972; 14 beautification programs, all in FY 1972; 1 federal lands program in FY 1972; and 1 bridge replacement program in FY 1972. The programs obligated \$73,621,443 of federal-aid funds, \$31,679,877 in FY 1971 and \$41,941,566 in FY 1972; the entire \$6,262,643 of right-of-way revolving funds, \$200,000 in FY 1971 and \$6,062,643 in FY 1972; the entire \$1,055,573 beautification funds, in FY 1972; \$2,000,000 of federal lands highway funds, all in FY 1972; and the entire \$317,179 of bridge replacement funds, in FY 1972.



The number of program submittals in the biennium increased approximately 30 percent over the previous biennium. During the reporting period, the section prepared and submitted to the U.S. Department of Transportation three requests for allocation of federal lands highway funds and many special requests for allocation of additional obligation authority.

In the upcoming two fiscal years, the Program Section will be concerned with developing and expanding the services of the section to meet the increasing needs of the Department and expanding federal regulations.





#### ROAD DESIGN

The organizational structure of the division remained essentially the same during the biennium except that the Traffic Design Section was separated into a new division of traffic engineering and the design data processing programmers were transferred to the Data Processing Division. The two design sections have been reorganized so that Interstate, urban, primary, and secondary projects are no longer segregated, but rather are assigned according to need.

The Roadside Development and Environmental Services Section has the responsibility of preparing the environmental impact statements and negative declarations in accordance with the new environmental requirements.

As of July 1, 1972, this division was operating with 98 permanent employees compared to 103 on July 1, 1970. The decrease as attributed to the transfer of the Traffic Design and Data Processing Sections to other divisions. The work force was quite stable during the biennium, but the development and recruitment of qualified draftsmen continued to be a problem.

Pollution control and environmental factors developed into a major consideration in design. Also, highway safety continued to be stressed and the incorporation of these factors into the design plans has been a significant challenge to the design division.

During the 1971–72 biennium the division completed construction plans on 88 contracts that included 98 projects (17 Interstate, 8 primary, 15 secondary, 1 federal lands, 5 landscape, 4 rest areas, 13 TOPIC, and 26 state).

#### STRUCTURAL DESIGN

The Foundation Section was transferred to the Materials and Testing Division and resulted in a reduction of personnel since the last reporting period. A new principal bridge designer position, which is responsible for inspections and field problems that arise during construction, was established during the biennium.

Over the past two years, 30 structures were built on Interstate 80, 11 on Interstate 15, 7 on the primary system, and 5 on the secondary system. The number of structures built according to county were: Clark, 15; Elko, 15; Humboldt, 8; Lincoln, 1; Nye, 2; Pershing, 2; and Washoe, 10.





#### TRAFFIC ENGINEERING

The Traffic Engineering Division was transferred from the Planning Survey Division to the Assistant Deputy State Highway Engineer, Engineering and Plans and now includes the Traffic Design Section. In May of 1972, the first two district traffic engineers in the history of the Department were assigned to the district engineer's staff in Las Vegas and Reno.

In 1971 the first major revision in 10 years of the "Manual on Uniform Traffic Control Devices" made major revisions to the signing, striping and signal standards on our highways. This created a need for additional instruction, not only our employees, but those of other governmental agencies and the public in general.





#### **LEGAL SERVICES**

The division has responsibility of instituting condemnation proceedings for the acquisition of right-of-way and carrying such proceedings forward through the entire judicial process afforded in Nevada.

The legislative waiver of sovereign immunity in 1965 has resulted in ever-increasing number of tort suits against the Department for personal injury and property damage allegedly caused by some wrongful act of the Highway Department.

Since the last report, the position of Special Investigator has been added to the office staff. It is the duty of the Special Investigator to investigate the claims brought against the Department as well as potential claims. He also interviews witnesses in regard to tort actions in order to help the attorneys prepare their cases.

The Chief Counsel is chairman of the Contract Review Board and in that capacity participates in the determination and recommendation of contractor's claims to the State Highway Engineer. Fifteen contract claims were processed by the Contract Review Board during the biennium.





Job Authorizations, 1971-1972 TABLE 1

			Balance	authorized	Amount		
	Number of	Amount	from	previously,	expended and	Total	Balance
	authorizations	authorized	previous	expended	authorized	expenditures	of work
District	this biennium	this biennium	biennium	this biennium	this biennium	this biennium	incomplete
One	20	\$336,504.00	\$288,492.00	\$288,492.00	\$284,931.00	\$573,423.00	\$51,573.00
Two	56	702,987.00	259,957.00	259,957.00	294,823.00	554,780.00	408,164.00
Three	27	403,101.00	121,021.00	121,021.00	211,842.00	332,863.00	191,259.00
Four	31	*837,578.00	34,769.00 OD	304,828.00	357,390.00	662,218.00	140,591.00
Five	26	430,183.00	17,388.00	17,388.00	293,993.00	311,381.00	136,190.00
Six	31	445,101.00	113,874.00	113,874.00	193,950.00	307,824.00	251,151.00
Headquarters	3	11,900.00			12,567.00	12,567.00	00.799
Totals.		\$3,167,354.00	\$765,963.00	\$1,105,560.00	\$1,649,496.00	\$2,755,056.00	\$1,178,261.00
*220 507 An authorization adjustment to Dietrict A miles to Inly 1 1070. 407 081 Authorized this biomium	instment to District A	prior to Inly 1 1070.	107 091 Authorized thi	hionnium			

· 000000010

Construction and Reconstruction Designated State Highway System

TABLE 2

	Miles new construction	Miles reconstruction	construction under contract	Miles reconstruction under contract	
Type	completed during biennium	completed during biennium	at close of biennium	at close of biennium	Total
Grading	18.993		4.755		23.748
Roadmix	1 1 1 0 0	6 6 9 9 1 1 0	1 1 1 0 0 0 1	0.237	0.237
Plantmix	28.843	194.805	31.079	53.741	308.468
Concrete	16.054		0.823		16.877
Totals.	63.890	194.805	36.657	53.978	349.330

30 738 348

#### TABLE 3 **Contracts and Letting**

88 Contracts and 56 Bid Openings

21 Interstate

20 Primary

17 Secondary

3 Urban

15 State

11 Topics

1 Special Bridge

Amount of contract Up to \$50,000	9 13 8 28	No. bidders 39 56 50 32 82
\$1,000,000 to \$1,500,000 \$1,500,000 to \$3,000,000 Over \$3,000,000	9	18 44 27
Contracts awarded.	86	

348 bids submitted on 88 contracts

Average 4.0 bidders per contract

<sup>&</sup>lt;sup>1</sup>1 Readvertise. <sup>2</sup>1 Readvertise.

### TABLE 4

Transportation Permits	
	990 7,214 488 235 484
Total	17,814
Transportation Permits Issued	
July 1, 1970 thru December 31, 1970  January 1, 1971 thru December 31, 1971  January 1, 1972 thru June 30, 1972	5,292
Total	10,600
Mobile Home Permits Issued	
July 30, 1970 thru December 31, 1970  January 1, 1971 thru December 31, 1971  January 1, 1972 thru June 30, 1972	4,412
Total	7,214
Special Transportation Permits (70 feet to 105) Special Overlength	
June 30, 1970 thru December 31, 1970  January 1, 1971 thru December 31, 1971  January 1, 1972 thru June 30, 1972	
Total	188
Grand total of all transportation revocable permits issued.	18,002

#### TABLE 5

#### **Encroachment Permits** No. units issued 204 Telephone and telegraph lines. Television cable 195 Power lines Service pipe— Gas lines..... 130 156 Water lines 73 Sewer lines. 3 Culverts Storm drain Approach roads and driveways..... 205 Miscellaneous Grand total 1,044 TABLE 6 **Prequalified Contractors** No. of Rating contractors \$50,000 to \$90,000. 1 \$100,000 to \$240,000.... 3 \$250,000 to \$490,000..... 12 \$500,000 to \$990,000..... 19 \$1,000,000 to \$1,490,000.... 11 \$1,500,000 to \$2,490,000.... 16 \$2,500,000 to \$4,990,000..... 15 \$5,000,000 to \$9,990,000.... 15 \$10,000,000 and over..... 54 Grand total 146

June 1970 there were 126 prequalified contractors June 1972 there were 146 prequalified contractors

TABLE 7
Nonfederal Sources of Moneys for Fiscal Years 1971 to 1972—July 1, 1970 to June 30, 1972

	•	• /	· · · · · · · · · · · · · · · · · · ·
User revenues—	FY 1971	FY 1972	Total
Motor fuel tax	\$13,749,619.22	\$14,847,831.74	\$28,597,450.96
Special fuel tax	2,224,706.48	2,568,873.05	4,793,579.53
Motor vehicle registration	3,906,829.67	4,356,967.70	8,263,797,37
Motor carrier fees	5,012,832.56	5,564,319.93	10,577,152.49
Driver's license fees		450,435.25	957,472.41
Motor vehicle privilege taxes		385,662.58	727,667.20
Public service regulatory taxes		182,304.00	340,983.00
	\$25,901,708.71	\$28,356,394.25	\$54,258,102.96
Other sources—	FY 1971	FY 1972	Total
Sale of assets	\$118,862.56	\$316,817.25	\$435,679.81
Rentals		98,427.10	212,616.57
Agreements	583,594.28	1,081,049.09	1,664,643.37
Insurance recovery	101,900.52	61,814.15	163,714.67
Highways and Parks magazine	89,530.54	112,142.05	201,672.59
Sale of inventory	93,793.36	86,335.82	180,129.18
Miscellaneous	74,298.32	2,106,283.51	2,180,581.83
	\$1,176,169.05	\$3,862,868.97	\$5,039,038.02
Total nonfederal	\$27,077,877.76	\$32,219,263.22	\$59,297,140.98

TABLE 8
Expenditures by Activity for Fiscal Years 1971 and 1972—July 1, 1970 to June 30, 1972

	FY 1971	FY 1972	Total
Construction	\$31,571,727.15	\$41,198,696.54	\$72,770,423.69
Maintenance	7,986,507.09	8,426,066.09	16,412,573.18
Survey, plans, design and right-of-way	7,961,385.85	8,343,142.67	16,304,528.52
Administration	2,791,807.58	3,848,872.13	6,883,783.87
Equipment and plant	2,772,609.13	2,859,796.83	5,632,405.96
Buildings	57,774.80	132,282.31	190,057.11
Research and investigation	1,031,738.94	1,001,792.55	2,033,531.49
Highways and Parks magazine	308,085.54	230,361.16	538,446.70
July traffic count		17,900.51	36,983.96
Public relations and information	218,998.77	230,314.09	449,312.86
State road map	50,378.81	2,317.31	52,696.12
Total	\$54,770,097.11	\$66,291,542.19	\$121,304,743.16

TABLE 9

Federal Reimbursement for Fiscal Years 1971 and 1972—July 1, 1970 to June 30, 1972

Preliminary engineering—	FY 1971	FY 1972	Total
Interstate	\$929,960	\$529,891	\$1,459,851
Primary		78,535	375,123
Secondary		107,137	613,734
Urban		2,331	15,642
Subtotal	\$1,746,456	\$717,894	\$2,464,350
Right-of-way—			
Interstate	1,548,953	1,743,027	3,291,980
Primary		695,679	1,266,637
Secondary		210,426	288,584
Urban		(12,177)	144,968
Subtotal	\$2,355,214	\$2,636,955	\$4,992,169
Construction—			
Interstate	14,694,735	17,835,609	32,530,344
Primary		4,683,096	9,684,020
Secondary		5,456,272	6,821,708
Urban		2,918	94,868
Subtotal	\$21,153,045	\$27,977,895	\$49,130,940
Construction engineering—			
Interstate	1,389,429	1,736,761	3,126,190
Primary		439,460	936,106
Secondary	243,339	629,826	873,165
Urban		1,680	6,984
Subtotal	¢2 124 710	\$2.007.727	\$4,942,445
Subtotal	\$2,134,718	\$2,807,727	\$4,942,443
Planning	477,008	589,797	1,066,805
Special projects	1,283,843	384,049	1,667,892
Total federal reimbursement	\$29,150,284	\$35,114,317	\$64,264,601

**TABLE 10 Structures by Counties** 

County	Bridges over waterways	Railroad grade separation structures	Interchange structures	Highway grade separation structures	Pedestrian	Tunnels	Total
Carson City	•	0	0	0	0	0	2
Churchill		ŏ	6	2	ŏ	ŏ	42
Clark		33	60	$2\tilde{4}$	ĭ	ŏ	250
Douglas		0	0	0	Ō	2	26
Elko		10	24	21	0	$\overline{0}$	121
Esmeralda		0	0	0	0	0	3
Eureka	13	6	7	2	0	0	28
Humboldt	12	6	17	10	0	0	45
Lander	9	0	2	4	0	0	15
Lincoln	14	2	0	0	0	0	16
Lyon		4	4	4	0	0	32
Mineral	4	0	0 .	0	0	0	4
Nye	17	0	2	0	0	0	19
Pershing	11	1	16	6	0	0	34
Storey		1	0	0	0	0	3
Washoe		13	52	29	3	0	136
White Pine	3	2	0	0	1	0	6
Totals	405	78	190	102	5	2	782

TABLE 11

# Structure Summary

	NUMBER -	NUMBER OF STRUCTURES BUI	LT BY STATE HIGHWA	WAY		
	Constructed	Constructed during			Structures on highway	É
	or under construction	or under	Structures	Total	system not built by	structures
	as of	construction	abandoned	as of	State	as of
Summary by type	June 50,	June 30, 1972	biennium	June 30,	Department	1972
	4	0	0	4	0	4
Reinforced concrete	573	24	e	594	15	609
Structural steel	42	 	0	47	14	61
Timber	16	0	0	16	4	20
Composite structures (reinforced concrete structural steel)	20	14	0	34	0	34
Prestressed concrete	35	10	0	45	0	45
Structural plate pipe	7	0	0	2	0	2
Multiple pipe.	4	0	0	4		S
Tunnêls.	0	0	0	0	2	2
Ē				100		000
Total	060	50	, ,	740	30	787
Total length of structures in feet.	78,924	12,211	1,139	89,996	5,690	9,568
Average length of bridge in feet.	113	230	380	121	158	122
	SUMMARY B	Y PURPOSE				
Bridges over waterways	361	19	7	378	27	405
Railroad grade separation.	70	9	<del></del>	75	3	78
Interchange structures.	173	17	0	190	0	190
Highway grade separation	68	11	0	100	7	102
Pedestrian structures	က	0	0	co		5
Tunnels.	0	0	0	0	2	2
E						
Total	969	53	m	746	36	782

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Ħ	
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**Materials and Testing** 

	No. OF SAMPLES	1		Total No
			Total	of tests
Soils Section.	1,889	2,238	4,127	21.376
Roadbed Aggregates.	4,364	3,354	7,718	42,978
	190	182	372	5,723
	2,368	2,719	5,087	62,001
Chemical Laboratory	672	979	1,651	9,371
	4,299	3,299	7,598	15,145
( 4	135	193	328	416
	572	869	1,441	
Research Special (Skid tests)	559		. !	559
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1,000			1,000
Total Tests				158.569

50.00 10.00

10,391,890 lbs.	32 structures 32 structures	3,672 feet	8			
Structural Steel Inspection— (Weldments) by non-destructive test	(B) Water Proofing 32 structures Engineering Geology and Foundations Section—	Foundation Brings. Composite Length of Holes Drilled	Special Studies (Rock bolt, water wells, geo-physical survey, pile drive and	Branch Laboratories, under the control of the Headquarters Laboratory, Elko and Las Vegas report as follows—	Elko—a total of 3,229 tests made during the 1970–1972 period. Las Vegas—a total of 5,202 normal or routine tests with 79 special tests for	other agencies, and miscellaneous material sampled and sent to Carson City for testing, 1096, or a total for testing and sampling of 6,377.

13	
TABLE	

	District No. 6	\$2,871.03	1,695.93	1,708.71	2,763.17	3,116.64	1,149.46	1,393.13	2,257.18	1,229.00	1,247.27	1,701.22	4,166.41	\$25,299.15
	District No. 5	\$1,867.45	1,563.00	2,292.68	1,850.41	1,883.39	1,050.27	2,423.32	1,913.68	1,944.54	1,106.05	1,129.86	3,521.55	\$22,546.20
1971	District No. 4	\$1,169.89	1,469.75	1,621,09	2,227.10	1,831.19	744.37	794.71	934.86	1,054.69	1,021.55	840.41	1,950.73	\$15,660.34
Debris Removal by District—Fiscal Year 1971	District No. 3	\$1,027.02	1 4 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	132.45		129.98	20.62	4 4 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	97.06	1,500.07	1,242.51	2,803.45	3,005.79	\$9,958.95
Debris Removal by	District No. 2	\$11,379.15	8,637.57	8,191.74	17,165.08	10,504.34	6,097.50	4,175.38	8,236.60	7,018.34	7,882.75	12,168.78	18,083.70	\$119,540.93
	District No. 1	\$6,598.77	•	•	<del>`</del>	6,298.76	5,654.34	8,462.07	7,255.18	8,492.85	7,932.92	6,815.24	16,479.76	\$98,475.42
	Month	July 70	August 70	September 70	October 70	November 70	December 70	January 71	February 71	March 71	April 71	May 71	June 71	Yearly totals

## TABLE 14

														\$24,339.62
972	District No. 4	\$1,169.25	1,946.72	863.15	1,033.24	1,418.33	732.72	802.09	942.46	860.33	1,617.59	986.57	2,862.24	\$15,234.69
Debris Removal by District—Fiscal Year 1972	District No. 3	\$1,286.42	1,205.82	423.96	443.34	231.90	161.61	409.83	250.95	619.61	1,235.67	1,091.87	2,214.41	\$9,575.39
Debris Removal by	District No. 2	\$10,314.79	8,749.34	9,613.11	7,131.25	8,478.98	6,412.78	5,422.15	5,283.01	7,160.46	7,515.71	7,148.13	10,025.99	\$93,255.70
	District No. 1	\$13,857.78	12,809.81	_	6,756.68	7,181.74		6,738.65	5,166.34	5,809.74	7,690.95	7,775.05	6,956.62	\$95,148.45
	Month	July 71	August 71	September 71	October 71		December 71	January 72	February 72	March 72	April 72	May 72	June 72	Yearly totals.

#### TABLE 15

#### **Condemnation Litigation**

Parcels referred for condemnation	40
Parcels purchased after condemnation referral.	
Condemnation cases filed.	
Cases settled	
Cases appealed	
Cases tried	
Pending condemnation cases July 1, 1970	
Pending condemnation cases June 30, 1972	
Tort Litigation	
Claims filed against Department.	42
Suits filed against the Department	20
Cases settled or dismissed	9
Cases tried	2
Cases pending.	
Cases on appeal	1

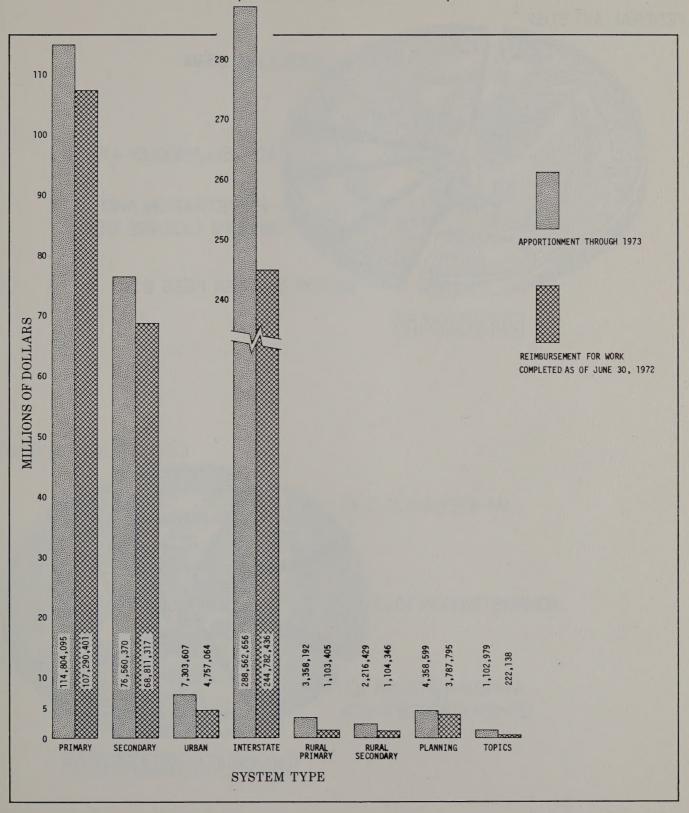
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30	Traffic Engineering		
Contract No.	Description	County	Bid price
1357	Tonopah Rest Area (lighting)	Esmeralda	*\$4,000
1361	S.R. 28 (Incline) signal	Washoe	21,431
1364	Lakeside-Moana (land widen)	Washoe (TOPICS)	70,477 70,646
1365		White Pine	10,043
1366	Elevated Freeway, Las Vegas (signals)	Clark	*115,000
1367		Churchill	26.730
1372	Hawthorne (signals)	Mineral	11 992
1375	Valmy Rest Area (lighting)	Humboldt	*4 700
1376	U.S. 395 South of Carson City (lighting)	Carson City	*6.290
1377	I-80 Structured (preliminary signal and light)	Washoe	*13,300
1378	Valley and Sixth, Reno	Washoe (TOPICS)	16,810
1380			46,650
1381	North-South Freeway,	Washoe	*69,000
1382	Second Street, Reno (s	Washoe (TOPICS)	66 987
1383.			*12,334
1385	Boynton Lane, Reno (1)	Washoe	*5,720
1390	Stewart and Williams, C	Carson City	10,370
1393	Lake Mead and Water,	Clark (TOPICS)	29.054
1394	Carlin Tunnel Portal (preliminary li	Elko	*7.475
1403	orth-South Freeway,	Washoe	*12,000
1408	80 Mini Park (rest	Washoe	*2,500
1411	15 Bonanza North (	Clark	*31.600
1413	15 Logandale Inter	Clark	*47,000
1414	Points, North Las Ve	Clark	52.821
1415	15 Carey Ave. (light	Clark	*17.270
1418	I-80 Grade and Drain, Reno (preliminary lighting)	Washoe	*2,465
1419Pa	radise Road, Las Veg	Clark	310,515
1420	Sahara Ave. West, Las Vegas (signals and lighting)	Clark	*233,662
1422	dustrial and Spring Mountain	Clark (TOPICS)	31,525
1423	manza and Main, Las	Clark (TOPICS)	104,605
1429	ashington and Main, I	Clark (TOPICS)	53,363
1437	Sierra and Ninth, Reno	Washoe (TOPICS)	20,444
1439	I-15 North Las Vegas and Lake Mead Blvd. (signals and lighting)	Clark	*103,535
1440	Ring Road and U.S. 395 North (signals)	Washoe	*31,000
1442	Ralston and Second, Reno (signals)	Washoe (TOPICS)	37,900
1444	ning (signals	Clark	*225,500
1445	Paradise and St. Louis, Las Vegas (signals)	Clark (TOPICS)	67,119
1446.			27,723
**************************************	U.S. 40 and Galletti, Sparks (signals)	Washoe (TOPICS)	41,500
		Total	\$1,973,448
	Summary of Projects		
Type		Number	Cost
IOPICS projects		13	\$584,326
Other signals only projects	ects		444,821
Roadway projects which included signals	th included signals.	19	944,301
F-7-21			
I otal		39	\$1,973,448

\*Signals included with roadway project.

#### APPORTIONMENT AND FEDERAL REIMBURSEMENT

(CUMULATIVE FROM 1917)



### RECEIPTS AND DISBURSEMENTS BIENNIUM

